Update on D0 Data Peservation Activities

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General Status

- Reminder of overall goals: Level 4 preservation through 2020; minimal changes to existing infrastructure through FY 2016
- Several pieces already done (analysis notes to INSPIRE, ensure code compatibility with SL6, migrate internal presentations, update file catalog (SAM) to current tools from Intensity Frontier for long-term support)
  - Now in good shape for full analysis capability through 2016
- Recent progress on future job submission and data file delivery

Job Submission

- D0 currently has dedicated cluster with ~6000 slots
  - Need alternate system as machines begin to die off and not replaced
- Best choice is running on FNAL GP Grid nodes (Fermigrid) using IF job submission tools
  - Requires updates to job submission infrastructure, creation of D0 glideinwms instances, creating appropriate disk area. Mostly done now.
- D0 software provided via CVMFS
  - CVMFS instance set up, imported, successfully tested

Test results…

```
ısing /grid/fermiapp/products/common/prd/ifdhc/v1_2_1/Linux64bit-2-6-2-5/bin/ifdh
Nazzap!
/ou are running on fnpc5003.fnal.gov
Which is a 2.6.18-348.16.1.el5 machine
.et us try to test the CVMFS infrastructure
Here is the existing CVMFS config directory:
-----
:ms.hep.wisc.edu.conf
l0cfs.fnal.gov.conf
ım2cfs.fnal.gov.conf
ıovacfs.fnal.gov.conf
ıasis.opensciencegrid.org.conf
-----
cvmfs/d0cfs.fnal.gov/D0/
list
ıps
ısr
cvmfs/d0cfs.fnal.gov/d0usr/
ıroducts
ısr
/ou should have gotten OK for the first two commands and then a listing of the d0 distribution directories for the ls command
.et's try setting up a release now...
*** setup D0RunII p21.27.00 SRT_QUAL=maxopt
Scientific Linux Fermi LTS release 4.2 (Wilson)
SRT_PRIVATE_CONTEXT = /d0/data/condor-tmp/kherner
:heck d0tools dir :
/03-13-04
No default SAM configuration exists at this time.
D0TOOLS_DIR =  /cvmfs/d0cfs.fnal.gov/d0usr/products/d0tools/NULL/v03-13-04
ry to actually do something...
und0exe: You are running on the collection of computers known as d0race
und0exe: Using executable from release
und0exe: Using framework rcp from release
und0exe: Results for this job to be placed in ./TMBAnalyze_x-p21.27.00-maxopt-Linux-tmbAna_test.list
und0exe: Using official RCP area
und0exe: Executing init script $D0TOOLS_BIN/inittmbanalyze.sh
Checking for empartfit
Checking for cal_nlc
Checking for tau_cand
und0exe: Sourcing script $D0TOOLS_BIN/chunkanalyzesource.sh
und0exe: Executing: ./TMBAnalyze_x  -rcp framework.rcp -input_file listfile:tmbAna_test.list-filelist.12907 -num_events 100 -out TMBAnalyze_x.out -log TMBAnalyze_x.log -time -mem -f
dle job killer: Starting idle process watcher for process id 13630
dle job killer: Max idle time: 6 hrs, scan interval: 15 min
dle job killer: Monitoring files:
dle job killer:   TMBAnalyze_x.out
dle job killer:   TMBAnalyze_x.log
-----------------------------------
     JetLifeTimeTagger
 Datatype : DATA
 Version  : p20.pass2
-----------------------------------
          track cuts
 maximum delatR track/jet   : 0.500000
 minimum track pT          : 0.500000
 maximum dca in xy plane    : 0.150000
 maximum dca in z plane     : 0.400000
 maximum track significance : 50.000000
 minimum track category     : 0
 minimum nb track in jet    : 2
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und0exe: command exited with status 0
```

Really running on Fermigrid

D0 CVMFS Areas visible

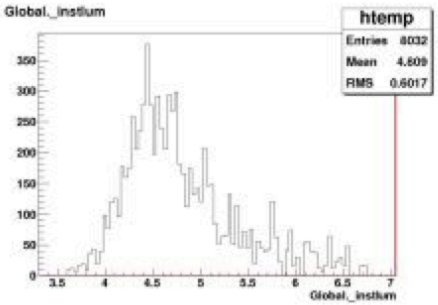
Successful Release setup

Successful d0tools setup

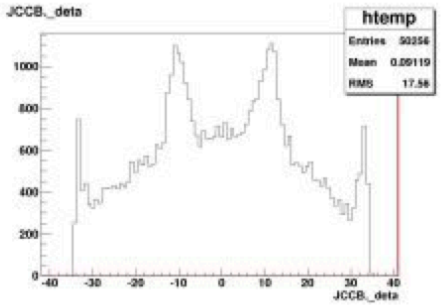
Successful executable start

Done!!!!!!

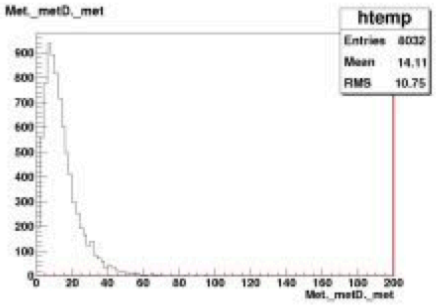
Local cluster vs. Grid comparison



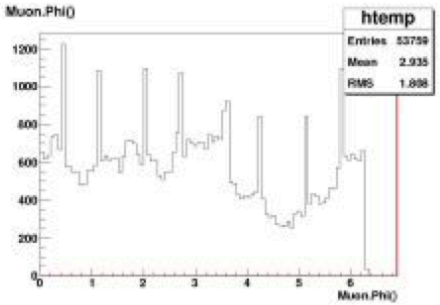
clued0_test_instLum.jpg, [eps]



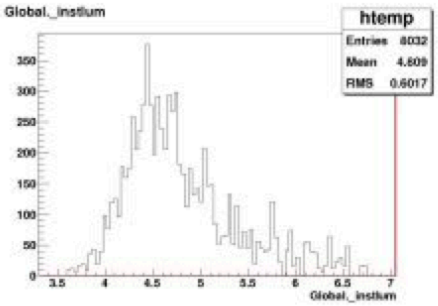
clued0_test_JCCB_deta.jpg, [eps]



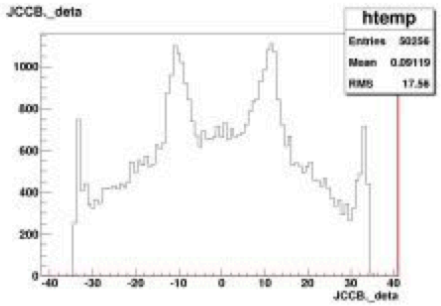
clued0_test_metD.jpg, [eps]



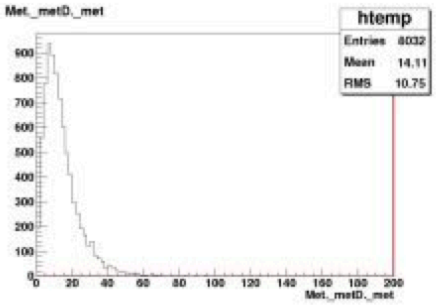
clued0_test_muon_phi.jpg, [eps]



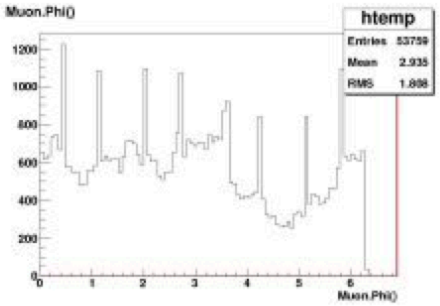
grid_test_instLum.jpg, [eps]



grid_test_JCCB_deta.jpg, [eps]



grid_test_metD.jpg, [eps]



grid_test_muon_phi.jpg, [eps]

Identical!

Still to do:
Update production submission tools to add this capability–
make it as similar to existing system as possible

File delivery

- D0 uses SAM and cache areas (about 1 PB) for file delivery to from tape libraries to analysis jobs
- Current SAM architecture moving away from SAM cache to interaction with dCache
  - Preferred solution for D0 DP; enables much better long-term support
- Currently have a small (25 TB) test dCache setup for D0; all files available as local paths through dCache + NFS v4.1 (will not be available on interactive nodes)
  - File delivery and via dCache+NFS v4.1 and subsequent analysis with D0 software successful on test node
  - Currently testing to see if we can avoid mounting full tape library on Fermigrid worker nodes
  - Plan to move to production in coming weeks

D0 summary

- Things are progressing very well
- Several important tasks are completed
- Prototype future job submission and file delivery tools have been developed and tested
  - Proof-of-concept tests all successful- the plan will work!
- Next steps involve setting up production systems this spring, and repeating a couple of published analyses with DP infrastructure as the ultimate test